

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 63-34242
Exam Date: 09/24/2024

1. Current Owner:
ZWJ PROPERTIES LLC 333 ROSSI ST STE 200 BOISE ID 83706
2. Accompanied by: Zeke Johnson
Phone No: (208) 890-4291
Address: 3550 N. Winsome Pl.
Relationship to permit Holder: Owner

3. **SOURCE:**
GROUND WATER

Method of Determination: Proof of beneficial use, field examination, driller's report

B. OVERLAP REVIEW

1. Other water rights with the same place of use: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
63-2576	Groundwater	Municipal	Decreed
63-9855	Groundwater	Municipal	Decreed

Comments: Multiple municipal water rights have overlapping place of use with this license. All domestic needs are supplied by a water right owned by United Water Idaho. Since this license is only for irrigation, there are no conflicts with overlapping water rights or permits.

2. Other water rights with the same point-of-diversion: NO Overlap

Water Right No.	Source	Purpose of Use	Basis
NA	NA	NA	NA

Comments: There are no overlapping water rights or permits for this point of diversion.

C. DIVERSION AND DELIVERY SYSTEM

1. **LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER NE¼ SW¼, Sec. 27, Twp 04N, Rge 02E, B.M. ADA County

Method of Determination: Field examination, GIS, Drillers Report.

PLACE OF USE: IRRIGATION

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
04N	02E	27									2.6			1.3					3.9

Right Acre Limit: 3.9

Total Acres: 3.9

Method of Determination: Field Examination, proof of beneficial use, and GIS.

2

3.

Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.

 X Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.

 X Aerial Photo Attached (required for irrigation of 10+ acres).

 X Photo of Diversion and System Attached

4.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
D0077574	VFD 230	10	NA	Franklin 100STS6	100 GPM at 270 ft.

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Flow Meter	Microprocessor-based transmitter	Siemens	Mag 5000	N1M2060017	115-230V	NA

2. Measurements: Well owner has installed a Siemens Mag 5000 flow meter.

E. FLOW CALCULATIONS

 Additional Computation Sheets Attached

Measured Method: No flows measurements were taken during this field examination. The well owner has a flows meter installed, and the irrigation system is entirely sub-surface. Well pump information will be used to calculate theoretical flows measurements.

Calculations:

AP Memo #17: $0.02\text{cfs} \times 3.9\text{ acres} = 0.08\text{ cfs}$

Using linear equation $Q_1/Q_2 = H_1/H_2$, knowing that the system will pump 100gpm at 270ft, assuming that the pump is at 210 ft., ten feet deeper than static water level.

$$100\text{gpm} / X = 220\text{ft.} / 270\text{ft.}$$

$$X = 81.48\text{ gpm} \times 0.00223 = 0.18\text{ cfs}$$

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 3.9 \text{ acres} \times 3.5 = 13.6 \text{ AFA}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = (0.08 \text{ cfs} \times 259) \times 1.9835 = 41.10 \text{ AFA}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 13.65 \text{ AFA}$$

2. Volume Calculations for Other Uses: Irrigation is the only use on this license.

G. NARRATIVE/REMARKS/COMMENTS

The owner of this permit initially applied for 0.16 cfs groundwater to irrigate a total of 8 acres within a 34.5-acre parcel. All domestic needs are supplied by a municipal water right owned by United Water Idaho. The 34.5-acre parcel has been subdivided into 9 private parcels and the subdivision features two common areas consisting of a fenced yard with a tennis court and an irrigated path providing access to public bike trails. Following the development period, there is a total of 3.9 acres of irrigated area. Two undeveloped residential parcels remained at the time of submission of proof of beneficial use and are not included in this license. There is one point of diversion, located on the subdivision manager's parcel within the place of use. Provided to the owner of this water right is a concept well design from SPF Water Engineering, the company who installed the well. Stated on the well design, is the capability of the pump to output 100 gpm at 270 ft. Using a linear equation and assuming that the pump was set at 220 ft (10ft below the seal), a theoretical calculation shows that the system can pump 81.5 gpm, or 0.18 cfs. The well is located within the basin 63 restricted groundwater area and the water bearing zone is 210 to 220 ft. The irrigation system will rotate between sprinkler zones so 0.18cfs will not be used at one given point in time, so the system can provide the licensed rate. With consideration to Application Processing Memo #17, 0.08cfs is my recommended rate for this license.

Upon permit approval, conditions were placed to monitor groundwater use within the Boise Front Low Temperature Geothermal Area, ensuring the well is drilled using the direct mud rotary drilling method, that the well is constructed and maintained with unperforated casing, a pump test shall be conducted on any well drilled under the permit, and that drillers notify IDWR 48 hours or more prior to conducting the pump test. SPF Water conducted a pump test for six hours with constant pumping measuring the static water level, water temperature, and recovery water level for an hour following the test period. The permit holder was required to provide the department with a temperature log of any well borehole for any well constructed for permit 63-34242. After the well was drilled, temperature readings were recorded at 110 feet, 130 feet, 150 feet, 170 feet, 190 feet, 210 feet, and at the bottom of the well. The temperature logger was allowed five minutes to calibrate at each location before recording the temperature every two seconds for the duration of the logging period (six hours). The highest recorded temperature was 66.34F. It is stated that the well was constructed using the mud-rotary method with 8-inch steel casing to 210 feet and 8-inch stainless steel from 210 to 220 feet. Static water level was 107 ft bgs at the time of completion of the well pump test. IDWR and protestants was notified of the test schedule six days prior to testing. The permitted 0.16 cfs for irrigation was sustained throughout the testing period. The pump test and well drilling and construction methods met all permit condition requirements, which will be removed at licensing.

Have conditions of permit approval been met? ☒ Yes ☐ No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Volume</u>
IRRIGATION	03/01 to 11/15	0.08 CFS	13.6 AFA

Totals: 0.08 CFS 13.6 AFA

2. Recommended Amendments

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☐ None

☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ None

I. AUTHENTICATION

Field Examiner's Name Kate Englund - Water Resource Agent Date 10/24/2024

Reviewer Cody PK Date 12-06-24



Figure 1 Irrigation as built diagram provided by the owner of this water right. The diagram only represents the owner's personal parcel, totaling to 1.66 acres of irrigated area.



This letter outlines a pump system to serve the pressurized irrigation system at the Win Hollow subdivision. The pump will be installed in the 8-inch well that was constructed at the site by Coonse Well Drilling in April 2018. Valves, flow meter, and pressure tank will be located in an 8-foot by 10-foot vault installed adjacent to the well by ZWJ. The system should include the following components.

- 10-hp submersible pump, Franklin 100STS6 or equivalent, 100 gpm at 270 feet
- 3-phase 230-volt motor
- 20-hp VFD 230 volt for single-phase input in outdoor-rated enclosure mounted in the vault
- Meter base, wiring, and miscellaneous electrical
- 189 feet of 3-inch drop pipe with column check
- 1-inch sounding tube
- 3-inch pitless adapter
- Swing joint with 3-inch x 2-inch reducer at pitless
- 2-inch galvanized iron discharge pipe and miscellaneous fittings
- 2-inch galvanized iron x 3-inch PVC adapter outside of vault
- 3-inch sch 40 PVC outside of vault; stub 10 feet from vault
- 2-inch magnetic flow meter (straight pipe run minimum 20 inches above and 10 inches below flow meter)
- Pressure tank - WX-250 (44 gal) or equal with ball valve for isolation
- Pressure transducer and pressure gage
- 2-inch ball valve for isolation
- Drain valves for piping and tank
- Blow-out port
- Hose bib (can double as drain valve)
- 1.5-inch pressure relief valve set for 75 psi
- 1.5-inch ball valve for flush-to-waste
- 1.5-inch galvanized iron pipe and fittings for flush-to-waste and pressure relief in vault
- 1.5-inch pvc or poly pipe from outside of vault to daylight on slope approximately 10 feet from the well
- 1-inch air and vacuum relief valve, Flomatic 6521 or equal

A schematic drawing and a site plan photo are attached for reference.

Figure 2 Well concept design provided to the owner of this water right by SPF Engineering.



Figure 3 Map including place of use boundary and point of diversion (well).



Figure 4 2022 aerial image of irrigated area. Permitted place of use outlined in red.



Figure 5 East facing photo of irrigated area located on water right owner's property.



Figure 6 North facing photo of irrigated area, taken from location of well head.



Figure 7 Hunter Pro-Spray PRS40 sprinkler head used to irrigate the perimeter of the owner's property. Another type of sprinkler is also used to irrigate the places of use.

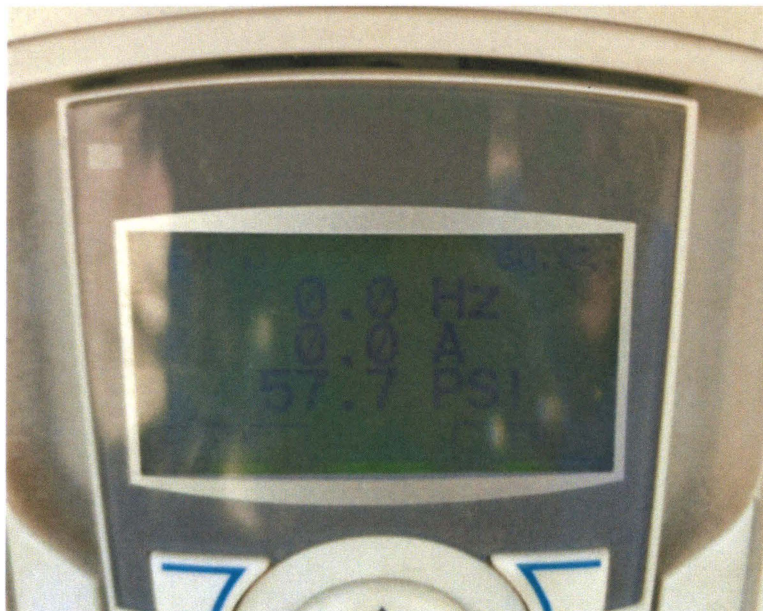


Figure 8 Current pressure shown on Siemens Sitrans Mag 5000 electromagnetic flow meter.



Figure 9 Specifications label for Siemens Sitrans Mag 5000 electromagnetic flow meter.



Figure 10 Pressure gage reading 40 psi for irrigation system, located at site of the well.

Englund, Kate

From: Zeke Johnson <zeke@rscigroup.com>
Sent: Tuesday, October 1, 2024 12:30 PM
To: Englund, Kate
Subject: RE: Test
Attachments: 20210518 - Irrigation As-Built Drawing.pdf; SPF Concept Design for Well.docx

CAUTION: This email originated outside the State of Idaho network. Verify links and attachments BEFORE you click or open, even if you recognize and/or trust the sender. Contact your agency service desk with any concerns.

Kate,

Here is the irrigation as-built drawing. Also the well design from SPF that indicate the exact pump that was provided:

- * 10-hp submersible pump, Franklin 100STS6 or equivalent, 100 gpm at 270 feet
- * 3-phase 230-volt motor

Please let me know if you need anything further.

Zeke Johnson, P.E. | President
RSCI | 333 W. Rossi St, Ste 200 | Boise, ID 83706
Office: 208.887.1401 | Direct: 208.472.0195 | Mobile: 208.890.4291 | Fax: 208.888.9130 <http://www.rscigroup.com>

-----Original Message-----

From: Englund, Kate <Kate.Englund@idwr.idaho.gov>
Sent: Wednesday, September 25, 2024 4:21 PM
To: Zeke Johnson <zeke@rscigroup.com>
Subject: RE: Test

Hey Zeke!

When you have a moment, do you mind sending over the irrigation plan that you mentioned yesterday with the pump information for your well?

Thank you very much.

Kate Englund

-----Original Message-----

From: Zeke Johnson <zeke@rscigroup.com>
Sent: Tuesday, September 24, 2024 4:29 PM
To: Englund, Kate <Kate.Englund@idwr.idaho.gov>
Subject: Test

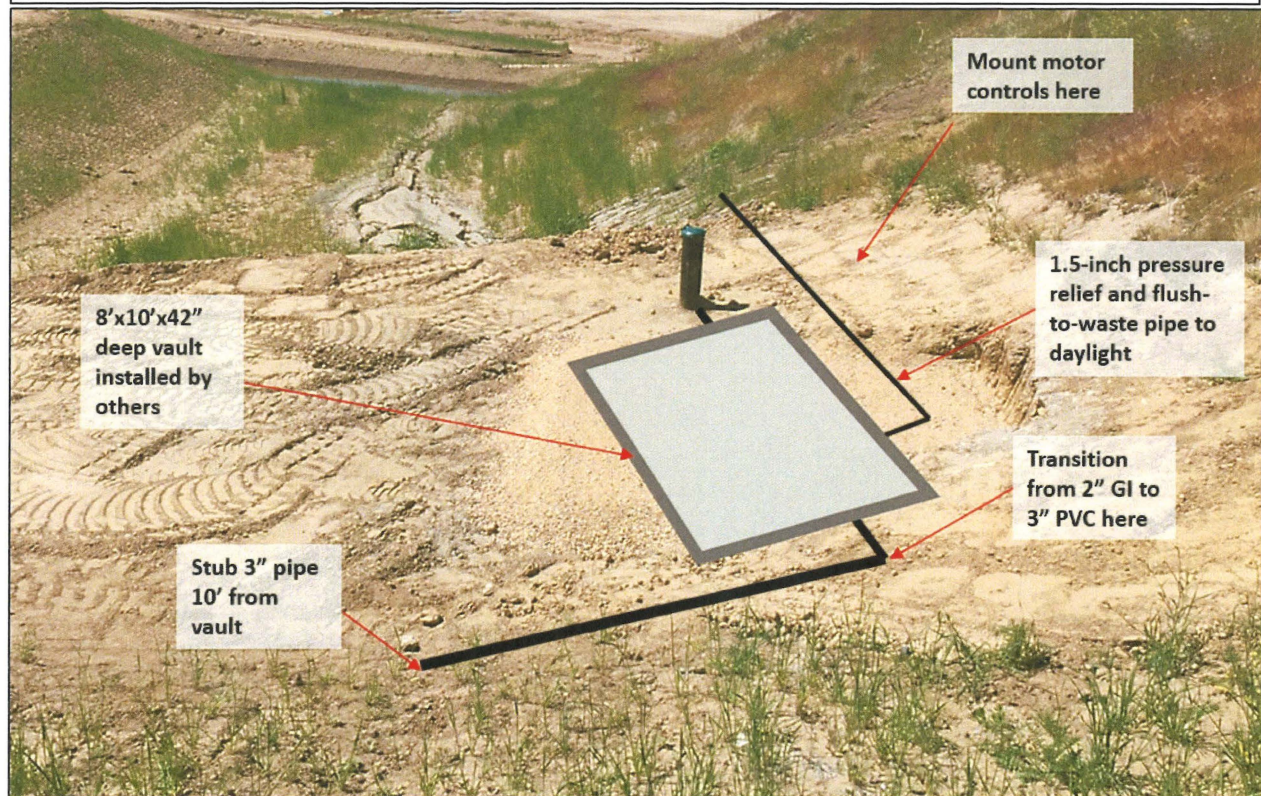
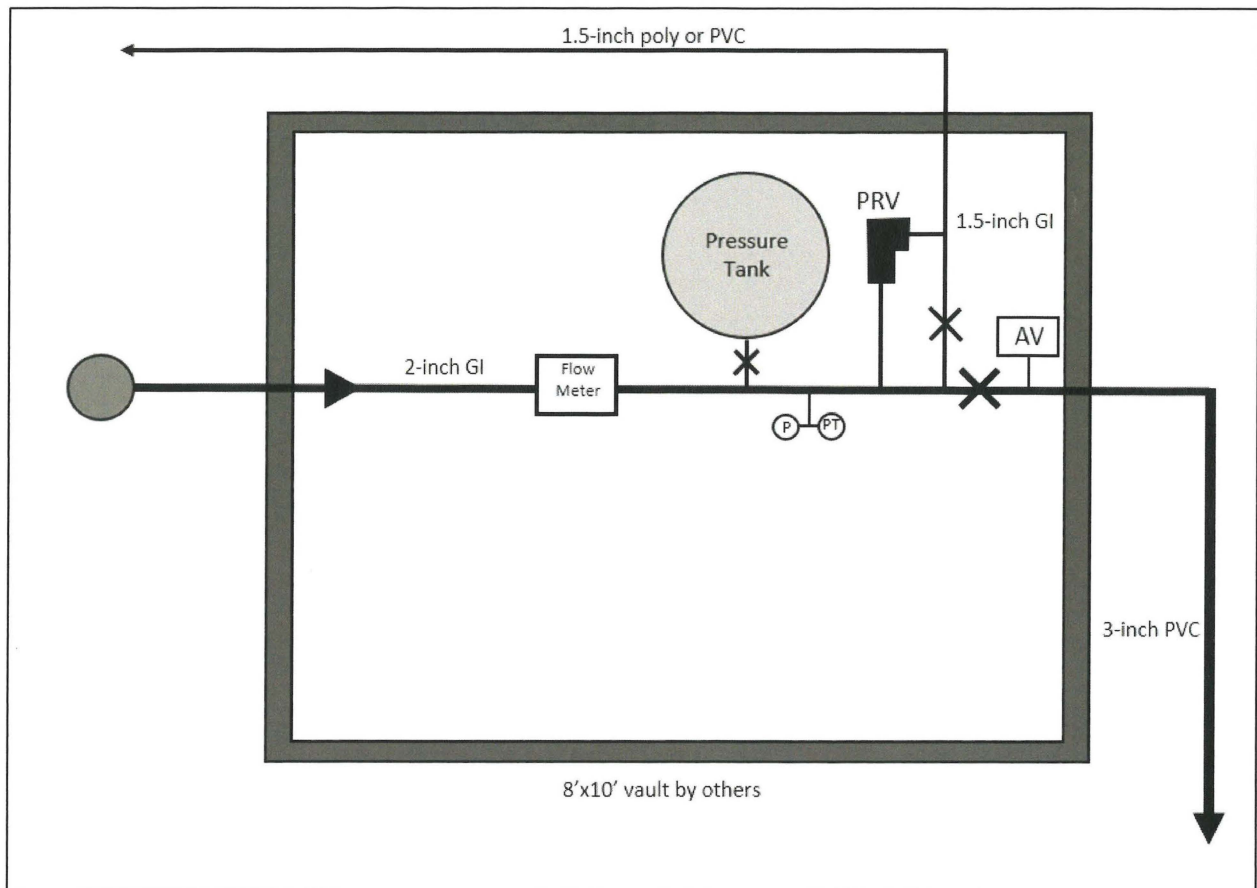
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Sent from my iPhone

This letter outlines a pump system to serve the pressurized irrigation system at the Win Hollow subdivision. The pump will be installed in the 8-inch well that was constructed at the site by Coonse Well Drilling in April 2018. Valves, flow meter, and pressure tank will be located in an 8-foot by 10-foot vault installed adjacent to the well by ZWJ. The system should include the following components.

- 10-hp submersible pump, Franklin 100STS6 or equivalent, 100 gpm at 270 feet
- 3-phase 230-volt motor
- 20-hp VFD 230 volt for single-phase input in outdoor-rated enclosure mounted in the vault
- Meter base, wiring, and miscellaneous electrical
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- 1.5-inch pvc or poly pipe from outside of vault to daylight on slope approximately 10 feet from the well
- 1-inch air and vacuum relief valve, Flomatic 6521 or equal

A schematic drawing and a site plan photo are attached for reference.



MEMORANDUM

DATE: May 22, 2018

TO: Nick Miller – Western Region Manager, Idaho Department of Water Resources
Charles Honsinger – Attorney for Protestant The Terteling Company, Inc.

FROM: Terry Scanlan, P.E., P.G.

CC: Zeke Johnson – ZWJ Properties, LLC

RE: Winsome Road Well Pumping Test and Post-Construction Temperature Profile

Summary. A pumping test was conducted on May 9, 2018, for the Winsome Road Well #2 in the NE quarter of the SW quarter of Section 27 in Township 4 North, Range 2 East (Figure 1) for ZWJ Properties, LLC, in accordance with the conditions of approval for water right No. 63-34242.

The results of testing indicated the well was capable of producing a sustained rate of 71 gallons per minute (gpm) with 29.56 feet of drawdown over the test duration of 6 hours.

On May 17, 2018 water temperature readings were collected at various depth in the completed well to verify that the bottom-hole temperature was below 85°F. A bottom-hole temperature of 75°F was measured.

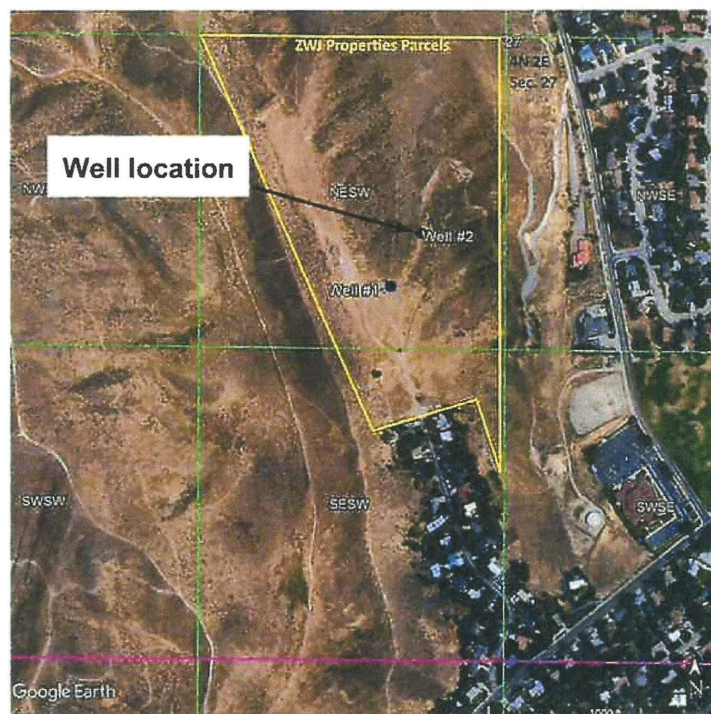


Figure 1. Winsome Road Well Location Map

IDWR Water Permit Conditions. The Winsome Road well is authorized to divert water under water permit 63-34242 (Attachment A). The permit allows a total diversion of 0.16 cfs (72 gpm) for the irrigation of 8 acres within the parcels owned by ZWJ Properties (identified in Figure 1) between March 1 and November 15 of each year. The Idaho Department of Water Resources (IDWR) approval of permit 63-34242 included the follow conditions.

- Permit holder shall provide IDWR with a temperature log of any well borehole (prior to casing and constructing such well), together with a subsequent temperature log for any well constructed as a point of diversion for permit no. 63-34242.
- The well used as a point of diversion for this water right shall be drilled using the direct mud rotary drilling method and shall be constructed and maintained with unperforated casing and sealed over the full length of the casing to a depth of 200 feet or more below ground surface.
- Permit holder shall test pump any well that is constructed as a point of diversion for permit no. 63-34242. Permit holder shall:
 - (1) notify IDWR of the testing date and time a minimum of 48 hours prior to testing;
 - (2) conduct test pumping for at least six hours at a constant pumping rate of no less than 75% of the nominal pumping rate selected for the permanent pump;
 - (3) measure static water level prior to testing;
 - (4) measure pumping water level, water temperature, and pumping rate at intervals of no less than once per hour; and
 - (5) measure recovery water level for a minimum of one hour following the end of pumping.

Water levels shall be measured with an accuracy of 0.1 feet or better. Pumping rate shall be measured with a calibrated flow meter or a volumetric means with an accuracy of 5% or better. The pumping test shall be conducted under the supervision of a professional engineer or geologist registered in the state of Idaho. IDWR may observe the pump test if desired. The engineer or geologist shall submit a stamped pumping test report to IDWR within 30 days of the completion of testing.

With the submittal of this memo to IDWR, all of these permit conditions have been met.

Well Description. Well construction was completed by Andy Clark of Coonse Well Drilling on May 3, 2018. A 12-inch borehole was drilled to 228 feet below ground surface (bgs). Drilling was conducted using the mud-rotary method. A temperature log was conducted on April 27, 2018 and submitted to IDWR and the protestant's representative by email on that date.

The well was constructed with 8-inch steel casing to 210 feet and 8-inch stainless steel well screen to from 210 to 220 feet. The annular space outside the casing and screen was filled with No. 8-12 silica sand below 207 feet, bentonite chips from 200 to 207 feet, and cement-bentonite grout above 207 feet.

Static water level at the time of well completion was 107 feet bgs, which rose to 105.5 feet bgs by the time of the pumping test on May 9th. The measured static level was about 105 feet bgs at the start of the temperature data collection on May 17th.

A Well Driller's Report is provided as Attachment B.

Pumping Test. The pumping test occurred on May 9, 2018. IDWR and the protestant's representative were notified of the test schedule by email on May 3, more than 48-hours prior to the start of test.

The test utilized a generator-powered electric submersible pump placed at a depth of approximately 189 feet bgs. Depth to water (DTW) measurements were made using an electric-line well sounder. Discharge from the test was pumped through a 2-inch hose, and a 2-inch Octave AWWA C750 flow meter was used to monitor the flow.

The pump was turned on at 9:00 AM and the instantaneous flow rate was measured at 74 gallons per minute (gpm). The flow rate was immediately adjusted to approximately 72 gpm, and the rate was held at approximately 71 gpm for the remainder of the pumping test. DTW measurements were collected at a maximum interval of 15 minutes. The pumping test was run at a constant rate for 6 hours. Instantaneous flow rate, pH, and temperature measurements were collected throughout the pump test. Well water level recovery was monitored after turning off the pump by taking several DTW measurements for a period of one hour.

Over the course of the pumping test, discharge rate was ranged between 70 to 73 gpm and averaged 71.2 gpm. Average water temperature and pH were about 20°C (68°F) and 7.28, respectively. Initially, discharge water was slightly turbid with some sand visible, but cleared as the test progressed. Little to no sand was visible in the discharge water by the end of the test. DTW in the well at the end of the pumping test was measured at 135.02 feet bgs, which corresponds to a drawdown of 29.56 feet (Figure 2). Water levels recovered to 106.57 feet bgs, or 1.11 feet of residual drawdown, within an hour of the pump being shut off. A table of pumping test measurements is provided as Attachment C.

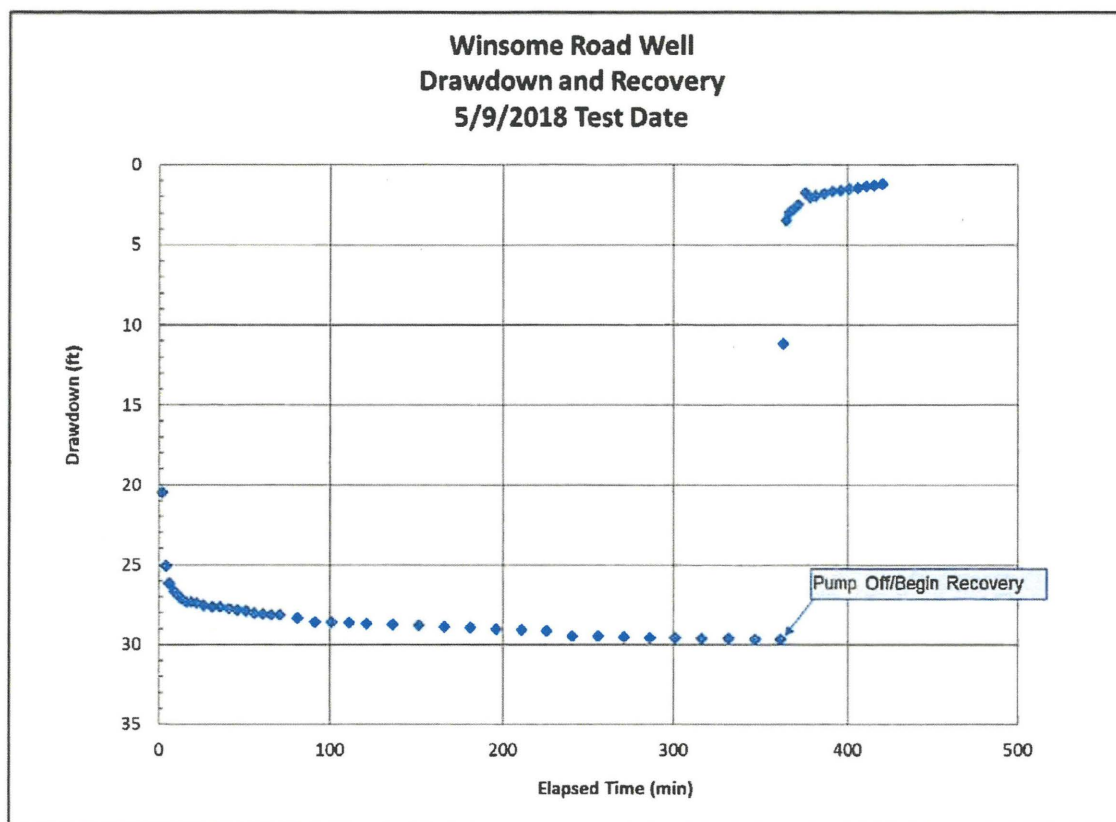


Figure 2. Pump Test Results

Water Temperature Profile. Water temperature data was collected from the completed well using a Solinst Levellogger Edge water pressure and temperature data logger on May 17, more than one week following completion of test pumping. The data logger collected a temperature reading every 2 seconds for the duration of the logging period. Temperature readings were collected at below top of casing depths of 110 feet, 130 feet, 150 feet, 170 feet, 190 feet, 210 feet, and at the bottom of the well. The logger recorded temperature at each depth interval for approximately 5 minutes to allow for partial stabilization of the temperature readings.

In order to be considered low-temperature geothermal groundwater, the water temperature must reach at least 85°F. The highest recorded temperature in the water was approximately 66.34°F at the well bottom (Figure 3), far below the low-temperature geothermal threshold.

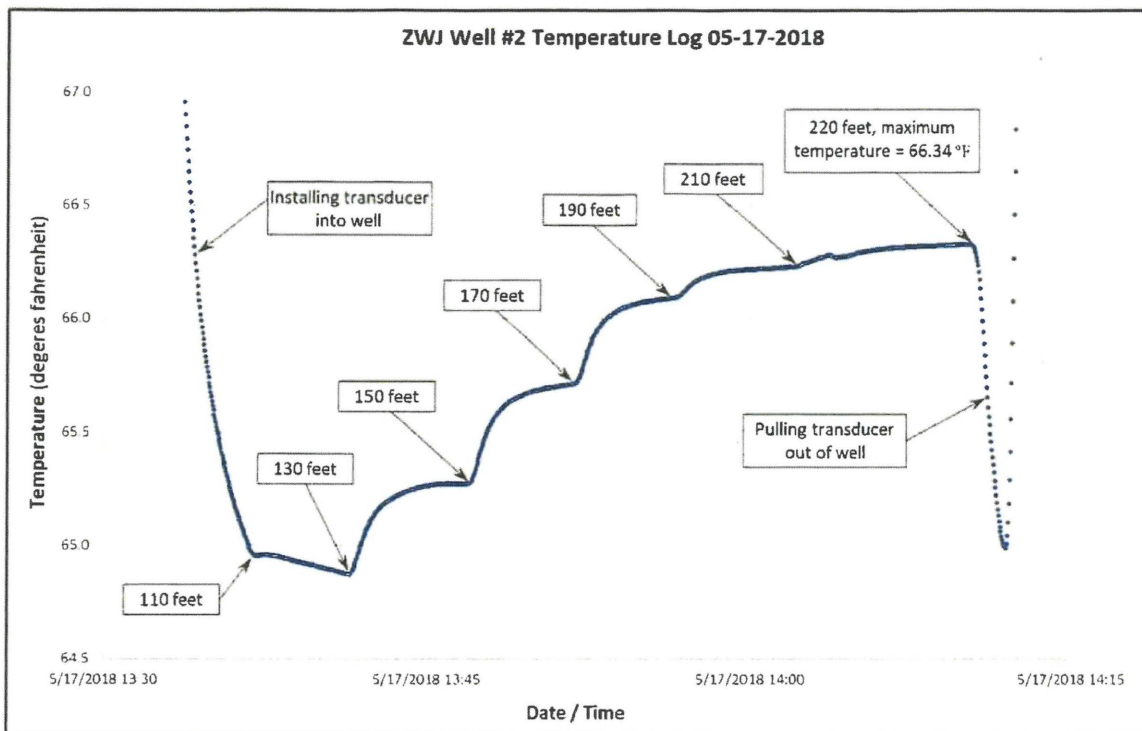


Figure 3. Well Temperature Profile Data

Conclusions

1. Productivity of Winsome Road Well #2 is adequate to supply the 0.16 cfs diversion rate authorized under permit 63-34242. Pumping water level under sustained pumping at 0.16 cfs will likely range from 135 to 140 feet below ground surface. A pump setting depth of 189 feet is recommended.
2. Bottom-hole temperature and produced water temperature were both less than 70°F.
3. Winsome Road Well No. 1 is not needed as a point of diversion under permit 63-34242. Well No. 1 could be maintained as an exempt domestic well for Win Hollow Subdivision Lot 5 or abandoned in accordance with Idaho Department of Water Resources rules.

